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Letter to the Editor

Letter to the Editor: Compartment Syndrome Resulting in Peripheral Nerve Injuries in a Patient Trapped Under Debris After an Earthquake

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Canan TIKIZ[1], İlhan Celil ÖZBEK[1]

1. Department of Physical Medicine and Rehabilitation, Celal Bayar University Faculty of Medicine, Manisa, Turkey

ORCID ID of the author(s):
C.T: 0000-0002-0172-4874
İ.C.Ö: 0000-0003- 0508-8868

Correspondence Author

İlhan Celil ÖZBEK, Department of Physical Medicine and Rehabilitation, Celal Bayar University Faculty of Medicine, Manisa, Turkey.

e-mail
ilhanozbek7@gmail.com

Phone
+90 554 760 93 10

Dear Editor,

We read with great interest the article titled " Crush and compartment syndrome due toearthquake injury," authored by Mr. Yazar, published in the 1st Volume, 2nd Issue of your journal dated July 03, 2023. Peripheral nerve injuries resulting from earthquakes are often overlooked or their treatment is delayed (1). We would like to express our gratitude for this comprehensive article that raises awareness on this topic.

Survivors rescued from under the rubble after the earthquake face devastating conditions with serious clinical consequences such as crush syndrome due to multiple traumas, especially in the extremities (2). Such traumas can result in long-term temporary or permanent disabilities and significantly affect the quality of life of survivors.

We would like to contribute to this study by presenting a case of a patient trapped under debris after an earthquake who experienced functional losses due to peripheral nerve injuries resulting from compartment syndrome.

Case: A 47-year-old female patient was trapped under debris for 27 hours following an earthquake on February 6, 2023. After being rescued, the patient was referred for emergency fasciotomy due to acute compartment syndrome, manifested by severe pain, swelling in the right upper limb and bilateral legs, and increased pain with passive

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movement of the extremities.

The patient underwent a fasciotomy operation on the right forearm volar and left lower leg tibia medial region at an external center. The patient, who came to Manisa because his relatives were in Manisa, was admitted to our hospital with complaints of bilateral dropfoot, and weakness in the right wrist and fingers.

Upon presentation to our hospital, the patient exhibited two superficial fasciotomy scars on the dorsum of the right hand and fasciotomy operation scars on the volar aspect of the right forearm and the left lower leg (**Fig. 1**). Passive joint motion ranges were normal in all four extremities. Muscle strength was 5/5 in the right shoulder and elbow, wrist extension/flexion was 4-/5, finger flexion/extension was 2/5, finger adduction/abduction was 2+/5, and thumb abduction/extension was 2-/5. Bilateral hip and right knee muscle strengths were normal, while left knee extension was 5/5, flexion was 3/5, and bilateral ankle dorsiflexion/plantarflexion/eversion/inversion was 0/5. Sensation was normal in radial and ulnar nerve distributions; hypoesthesia was observed in the median nerve distribution. Bilateral tibial nerve and superficial peroneal nerve distributions were assessed as hypoesthetic. The patient was able to walk with the support of one person using bilateral foot-ups due to bilateral drop foot.

Figure 1: Fasciotomy scars on the left lower leg and left forearm

Electromyography revealed total axonal degeneration of the median and radial nerves below the right elbow, partial axonal degeneration of the ulnar nerve, acute total axonal degeneration of the sciatic nerve on the right side, total distal and partial proximal axonal degeneration with mild regeneration on the left side.

When the patient's extremities were evaluated by ultrasonography, echogenicity, and increased volume were observed in the skin, subcutaneous tissues, and muscles. In the upper extremity, decreased echogenicity and increased transverse diameters were found between the nerve fibers and in the nerve sheath of the median, radial, and ulnar nerves below the elbow. (**Fig. 2**) In the lower extremity, decreased echogenicity and increased transverse diameters were found between the nerve fibers and in the nerve sheath in the sciatic nerve from the top of the popliteal fossa on the right and below the gluteal region on the left, followed by the tibial and communis peroneal nerves. (**Fig. 3**) The patient was enrolled in a physiotherapy and rehabilitation program to improve his functional status.

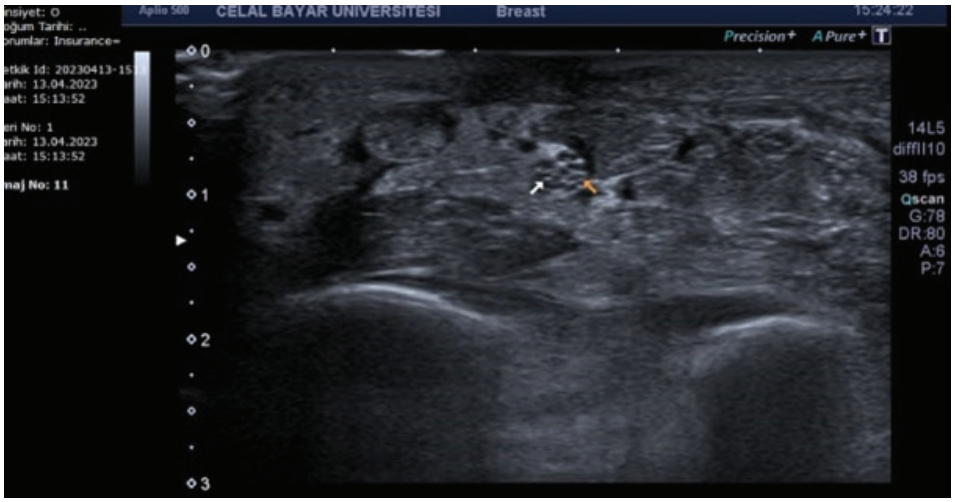

Figure 2: Significant edema and diameter increase in the left median nerve

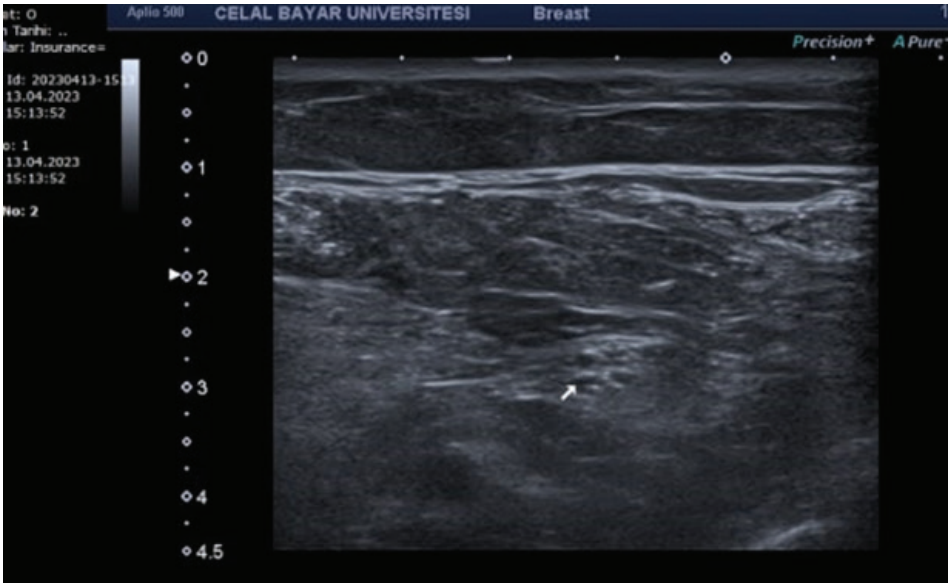

Figure 3: Significant edema and diameter increase in the left sciatic nerve

Following fasciotomy for acute compartment syndrome, peripheral nerve injuries can develop in varying proportions ranging from neuropraxia to axonotmesis, depending on the duration of the crush injury (3). Early detection of peripheral nerve involvement and initiation of an effective physical therapy program without delay, taking into account the nerve fiber regeneration period, are crucial for restoring function.

Yours sincerely.

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Data availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author upon reasonable request.

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